What is claimed is:

1   1.   A machine-implemented method, comprising:

2   creating, within a global operating system environment provided by an operating

3   system, a first non-global partition which serves to isolate processes running within that

4   partition from other non-global partitions within the global operating system

5   environment; and

6   establishing a first file system for the first non-global partition, wherein the first

7   file system cannot be accessed by processes running in any non-global partition other

8   than the first non-global partition, and wherein the first file system comprises at least one

9   virtual directory, which has associated therewith a reference to another particular file

10   system directory.

1   2.   The method of claim 1, wherein the virtual directory is part of a virtual file

2   system, which has been mounted into the first file system.

1   3.   The method of claim 2, wherein the virtual file system is a loopback file

2   system.

1   4.   The method of claim 1, wherein establishing the first file system

2   comprises:

3   mounting the other particular file system directory onto the virtual directory.

1   5.   The method of claim 4, wherein mounting comprises:

2   storing a set of semantics associated with the virtual directory, wherein the set of

3   semantics indicates that the virtual directory is part of a virtual file system.

1   6.   The method of claim 5, wherein the set of semantics further comprises the

2   reference to the other particular file system directory.

1   7.   The method of claim 1, wherein the first file system has a first root

2   directory associated therewith, wherein the first file system is a portion of an overall file

3   system associated with the global operating system environment, wherein the overall file

4   system has an overall root directory which is above the first root directory in a directory

5   hierarchy, and wherein processes running with the first non-global partition cannot

6   traverse above the first root directory in the directory hierarchy.

1   8.   The method of claim 1, wherein the first file system is a portion of an

2   overall file system associated with the global operating system environment, and wherein

3   the other particular file system directory resides in a portion of the overall file system that

4   is not a part of the first file system.

1   9.   The method of claim 1, wherein the virtual directory comprises no actual

2   files or directories.

1   10.   The method of claim 1, wherein the other particular file system directory,

2   or a subdirectory thereof, comprises one or more actual files.

1   11.   The method of claim 10, wherein processes running within the first non-

2   global partition have read-only access to the one or more actual files.

1   12.   The method of claim 1, wherein the other particular file system directory

2   is a virtual directory, which has associated therewith a reference to yet another file

3   system directory.

1   13.   The method of claim 1, further comprising:

2   creating, within the global operating system environment, a second non-global

3   partition which serves to isolate processes running within that partition from other non-

4   global partitions within the global operating system environment; and

5   establishing a second file system for the second non-global partition, wherein the

6   second file system cannot be accessed by processes running in any non-global partition

7   other than the second non-global partition, and wherein the second file system comprises

8   at least one virtual directory, which has associated therewith a reference to the other

9   particular file system directory.

1   14.   The method of claim 13, wherein the other particular file system directory,

2   or a subdirectory thereof, comprises one or more actual files which are shared by the first

3   and second non-global partitions.

1   15.   The method of claim 13, wherein establishing the second file system

2 comprising:

3   mounting the other particular file system directory onto the virtual directory of the

4 second file system.

1   16.   The method of claim 15, wherein mounting comprises:

2   storing a second set of semantics associated with the virtual directory of the

3 second file system, wherein the second set of semantics indicates that the virtual directory

4 of the second file system is part of a second virtual file system, and wherein the second

5 set of semantics further comprises the reference to the other particular file system

6 directory.

1   17.   The method of claim 1, further comprising:

2   receiving a request from a process running within the first non-global partition to

3 access a particular file;

4   traversing the first file system to the virtual directory;

5   following the reference to the other particular file system directory; and

6   accessing the particular file from the other particular file system directory, or a

7 subdirectory thereof.

1   18.   The method of claim 17, wherein accessing the particular file comprises:

2   determining whether a copy of the particular file is already in virtual memory; and

3   in response to a determination that a copy of the particular file is already in virtual

4   memory, using the copy already in virtual memory rather than making another copy in

5   the virtual memory.

1   19.   An apparatus, comprising:

2   a mechanism for creating, within a global operating system environment provided

3   by an operating system, a first non-global partition which serves to isolate processes

4   running within that partition from other non-global partitions within the global operating

5   system environment; and

6   a mechanism for establishing a first file system for the first non-global partition,

7   wherein the first file system cannot be accessed by processes running in any non-global

8   partition other than the first non-global partition, and wherein the first file system

9   comprises at least one virtual directory, which has associated therewith a reference to

10   another particular file system directory.

1   20.   The apparatus of claim 19, wherein the virtual directory is part of a virtual

2   file system, which has been mounted into the first file system.

1   21.   The apparatus of claim 20, wherein the virtual file system is a loopback

2   file system.

1   22.   The apparatus of claim 19, wherein the mechanism for establishing the

2   first file system comprises:

3   a mechanism for mounting the other particular file system directory onto the

4   virtual directory.

1   23.   The apparatus of claim 22, wherein the mechanism for mounting

2   comprises:

3   a mechanism for storing a set of semantics associated with the virtual directory,

4   wherein the set of semantics indicates that the virtual directory is part of a virtual file

5   system.

1   24.   The apparatus of claim 23, wherein the set of semantics further comprises

2   the reference to the other particular file system directory.

1   25.   The apparatus of claim 19, wherein the first file system has a first root

2   directory associated therewith, wherein the first file system is a portion of an overall file

3   system associated with the global operating system environment, wherein the overall file

4   system has an overall root directory which is above the first root directory in a directory

5   hierarchy, and wherein processes running with the first non-global partition cannot

6   traverse above the first root directory in the directory hierarchy.

1   26.   The apparatus of claim 19, wherein the first file system is a portion of an

2   overall file system associated with the global operating system environment, and wherein

3   the other particular file system directory resides in a portion of the overall file system that

4   is not a part of the first file system.

1   27.   The apparatus of claim 19, wherein the virtual directory comprises no

2   actual files or directories.

1   28.   The apparatus of claim 19, wherein the other particular file system

2   directory, or a subdirectory thereof, comprises one or more actual files.

1   29.   The apparatus of claim 28, wherein processes running within the first non-

2   global partition have read-only access to the one or more actual files.

1   30.   The apparatus of claim 19, wherein the other particular file system

2   directory is a virtual directory, which has associated therewith a reference to yet another

3   file system directory.

1   31.   The apparatus of claim 19, further comprising:

2   a mechanism for creating, within the global operating system environment, a

3   second non-global partition which serves to isolate processes running within that partition

4   from other non-global partitions within the global operating system environment; and

5   a mechanism for establishing a second file system for the second non-global

6   partition, wherein the second file system cannot be accessed by processes running in any

7   non-global partition other than the second non-global partition, and wherein the second

8   file system comprises at least one virtual directory, which has associated therewith a

9   reference to the other particular file system directory.

1   32.   The apparatus of claim 31, wherein the other particular file system

2 directory, or a subdirectory thereof, comprises one or more actual files which are shared

3 by the first and second non-global partitions.

1   33.   The apparatus of claim 31, wherein the mechanism for establishing the

2 second file system comprising:

3   a mechanism for mounting the other particular file system directory onto the

4 virtual directory of the second file system.

1   34.   The apparatus of claim 33, wherein the mechanism for mounting

2 comprises:

3   a mechanism for storing a second set of semantics associated with the virtual

4 directory of the second file system, wherein the second set of semantics indicates that the

5 virtual directory of the second file system is part of a second virtual file system, and

6 wherein the second set of semantics further comprises the reference to the other particular

7 file system directory.

1   35.   The apparatus of claim 19, further comprising:

2   a mechanism for receiving a request from a process running within the first non-

3 global partition to access a particular file;

4   a mechanism for traversing the first file system to the virtual directory;

5   a mechanism for following the reference to the other particular file system

6   directory; and

7   a mechanism for accessing the particular file from the other particular file system

8   directory, or a subdirectory thereof.

1   36.   The apparatus of claim 35, wherein the mechanism for accessing the

2   particular file comprises:

3   a mechanism for determining whether a copy of the particular file is already in

4   virtual memory; and

5   a mechanism for using, in response to a determination that a copy of the particular

6   file is already in virtual memory, the copy already in virtual memory rather than making

7   another copy in the virtual memory.

1   37.   A machine-readable medium, comprising:

2   instructions for causing one or more processors to create, within a global

3   operating system environment provided by an operating system, a first non-global

4   partition which serves to isolate processes running within that partition from other non-

5   global partitions within the global operating system environment; and

6   instructions for causing one or more processors to establish a first file system for

7   the first non-global partition, wherein the first file system cannot be accessed by

8   processes running in any non-global partition other than the first non-global partition, and

9   wherein the first file system comprises at least one virtual directory, which has associated

10   therewith a reference to another particular file system directory.

1   38.   The machine-readable medium of claim 37, wherein the virtual directory

2   is part of a virtual file system, which has been mounted into the first file system.

1   39.   The machine-readable medium of claim 38, wherein the virtual file system

2   is a loopback file system.

1   40.   The machine-readable medium of claim 37, wherein the instructions for

2   causing one or more processors to establish the first file system comprises:

3   instructions for causing one or more processors to mount the other particular file

4   system directory onto the virtual directory.

1   41.   The machine-readable medium of claim 40, wherein the instructions for

2   causing one or more processors to mount comprises:

3   instructions for causing one or more processors to store a set of semantics

4   associated with the virtual directory, wherein the set of semantics indicates that the

5   virtual directory is part of a virtual file system.

1   42.   The machine-readable medium of claim 41, wherein the set of semantics

2   further comprises the reference to the other particular file system directory.

1   43.   The machine-readable medium of claim 37, wherein the first file system

2   has a first root directory associated therewith, wherein the first file system is a portion of

3   an overall file system associated with the global operating system environment, wherein

4   the overall file system has an overall root directory which is above the first root directory

5   in a directory hierarchy, and wherein processes running with the first non-global partition

6   cannot traverse above the first root directory in the directory hierarchy.

1   44.   The machine-readable medium of claim 37, wherein the first file system is

2   a portion of an overall file system associated with the global operating system

3   environment, and wherein the other particular file system directory resides in a portion of

4   the overall file system that is not a part of the first file system.

1   45.   The machine-readable medium of claim 37, wherein the virtual directory

2   comprises no actual files or directories.

1   46.   The machine-readable medium of claim 37, wherein the other particular

2   file system directory, or a subdirectory thereof, comprises one or more actual files.

1   47.   The machine-readable medium of claim 46, wherein processes running

2   within the first non-global partition have read-only access to the one or more actual files.

1   48.   The machine-readable medium of claim 37, wherein the other particular

2   file system directory is a virtual directory, which has associated therewith a reference to

3   yet another file system directory.

1　　　49.　The machine-readable medium of claim 37, further comprising:

2　　　　instructions for causing one or more processors to create, within the global

3　operating system environment, a second non-global partition which serves to isolate

4　processes running within that partition from other non-global partitions within the global

5　operating system environment; and

6　　　　instructions for causing one or more processors to establish a second file system

7　for the second non-global partition, wherein the second file system cannot be accessed by

8　processes running in any non-global partition other than the second non-global partition,

9　and wherein the second file system comprises at least one virtual directory, which has

10　associated therewith a reference to the other particular file system directory.

1　　　50.　The machine-readable medium of claim 49, wherein the other particular

2　file system directory, or a subdirectory thereof, comprises one or more actual files which

3　are shared by the first and second non-global partitions.

1　　　51.　The machine-readable medium of claim 49, wherein the instructions for

2　causing one or more processors to establish the second file system comprises:

3　　　　instructions for causing one or more processors to mount the other particular file

4　system directory onto the virtual directory of the second file system.

1　　　52.　The machine-readable medium of claim 51, wherein the instructions for

2　causing one or more processors to mount comprises:

3   instructions for causing one or more processors to store a second set of semantics

4   associated with the virtual directory of the second file system, wherein the second set of

5   semantics indicates that the virtual directory of the second file system is part of a second

6   virtual file system, and wherein the second set of semantics further comprises the

7   reference to the other particular file system directory.

1   53.   The machine-readable medium of claim 37, further comprising:

2   instructions for causing one or more processors to receive a request from a

3   process running within the first non-global partition to access a particular file;

4   instructions for causing one or more processors to traverse the first file system to

5   the virtual directory;

6   instructions for causing one or more processors to follow the reference to the

7   other particular file system directory; and

8   instructions for causing one or more processors to access the particular file from

9   the other particular file system directory, or a subdirectory thereof.

1   54.   The machine-readable medium of claim 53, wherein the instructions for

2   causing one or more processors to access the particular file comprises:

3   instructions for causing one or more processors to determine whether a copy of

4   the particular file is already in virtual memory; and

5   instructions for causing one or more processors to use, in response to a

6   determination that a copy of the particular file is already in virtual memory, the copy

7   already in virtual memory rather than making another copy in the virtual memory.